

PROCEEDINGS
OF THE
MALACOLOGICAL SOCIETY OF LONDON.

MARTIN FOUNTAIN WOODWARD.

BORN NOVEMBER 5, 1865.

DIED SEPTEMBER 15, 1901.

Read 8th November, 1901.

BIOLOGICAL Science, and more particularly that branch of it in which this Society is peculiarly interested, has not for many years suffered so sad or so serious a loss as befell it on that dark September night when our then Secretary was drowned through the capsizing of a boat at the entrance of Ballinakill Harbour, on the west coast of Ireland.

Martin Fountain Woodward, the younger son of our esteemed first President, Dr. Henry Woodward, was born in London on the 5th of November, 1865, and received his early education at the Kensington Grammar School, where he attended from 1875 to 1883. In October of the last-named year he entered the Royal School of Mines and Normal College of Science (now the Royal College of Science), where the hereditary bent of his mind found free play, and where he applied himself with such ardour to his studies that the following year (1884), on the conclusion of his geological course, he was awarded the Murchison Medal and prize of books.

During the succeeding session (1884-5) he attended the zoological course, the last conducted by Professor Huxley in person, and was first on the list at both the elementary and advanced¹ examinations, while his dissection for the elementary practical examination was long kept as an ensample.²

This brought him his Associateship, while his marked ability in Biology led to his appointment by Professor Huxley as Assistant Demonstrator in October, 1885. In July of the following year he was

¹ Bracketed first in Advanced Zoology with A. V. Jennings, June, 1885.

² It had been his father's earnest desire that Martin Woodward should pass out of the Schools in Geology and Palæontology, but Professor Huxley (who was Dean, and at that time still took a lively and active interest in the College) called upon Dr. Woodward and urged upon him that his son should remain attached to the Biological Laboratory, and not pursue the advanced geological course which his father contemplated for him; Huxley, with characteristic animation, exclaiming, "It is necessary to keep up the apostolic succession in Biology, and Martin Woodward is *our man!*"

promoted to the rank of Demonstrator of Zoology, a status he still held at the time of his decease, and, to quote from the official report, "commenced . . . an inquiry into the detailed structure of the Molluscan odontophore."¹

His zeal in his work was not only shown in the way in which he discharged his official duties, but by the good use he made of the annual long vacations to yet further advance his biological studies. Thus in 1887 he accompanied Mr. W. H. Hudleston on a three weeks dredging cruise in the English Channel to the west of Portsmouth, and accompanied the Geologists' Association on their excursion into Cornwall.

In 1889 he spent three weeks at Guernsey investigating the marine zoology of the island; the summers of 1890 and 1891 were spent at Plymouth working in the Laboratory of the Marine Biological Association; subsequent vacations were passed in South Devon and at Sark (1896 and 1897); whilst on one occasion, with his friend and former pupil Mr. E. W. L. Holt, he explored some of the celebrated dene-holes in North Kent.

In the summers of 1899 and 1900 he joined Mr. Holt at the Marine Biological Laboratory of the Fisheries Board for Ireland, which was then stationed at Inishbofin, and the interesting series of Molluscan specimens that he brought back from that locality and exhibited at our meetings will be in the recollection of our Members.

In the present year, having recently and successfully undergone an operation for hernia, he was officially acting as assistant during the holidays at this Laboratory, which had been moved to a position in Ballinakill Harbour off the hamlet of Moyard. He had this time been especially interested in and had collected a number of fine Fusoids for investigation, which with other material, we are glad to say, has been placed by Mr. Holt in the hands of one of our Members, to be worked out for the Board.

Martin Woodward's stay was drawing to a close when, with his colleague and companion of his holiday, Professor W. Watson, he paid a visit on 15th September to his friend Mr. Allies, the resident owner of Inishbofin. On the return journey they were delayed by contrary winds, and did not approach the harbour until after dark. Suddenly, as they were nearing their destination, and were within a mile of land, a sharp squall from the hills upset and sank the boat. Martin Woodward, though a fairly good swimmer, never rose, and Mr. Watson and the boatman in charge, after calling in vain for their companion, only reached land themselves with great difficulty.

¹ 31th Rep. Dept. Sci. & Arts, p. 38.

It was not until September 27th that the body was recovered on the site of the catastrophe, and laid to rest two days later in the burial-ground attached to the Protestant Church at Moyard. In this sad fashion was a promising career cut short, alas! all too soon.

Famed for his manipulative skill¹ and his extensive biological knowledge, as well as the great care and accuracy of his observations, Martin Woodward was not a voluminous writer, as the bibliographical list of his papers appended to this notice shows. All his literary productions, however, are characterized by that extreme care and attention to detail which marked the rest of his work, and his conclusions are firmly based on foundations of carefully ascertained facts, while on all points open to difference of opinion the views of others, however adverse, are always fully and fairly stated.

Although, as incidentally mentioned, he started by working at the Mollusca, Martin Woodward's first published articles were on other subjects. Beginning with lighter notes contributed to minor societies, and with records of teratological facts that had come under his observation, he turned for a time to the Vertebrata, and his first important contributions to science comprise a series of papers on the dentition of certain groups of the Mammalia. Of these memoirs Dr. Forsyth Major, no mean authority, kindly writes:—

“M. F. Woodward's first publication, ‘On the Milk-Dentition of the *Procavia (Hyrax) capensis* and of the Rabbit,’ revealed an investigator who was not only perfectly conversant with, and even improved upon, the various methods in use for examination, but who at the same time combined with sound reasoning a clear exposition of known as well as new facts. In the *Procavia* Woodward discovered some additional milk-teeth, and showed that the deciduous set of this genus is composed, apart from the four grinders, of three upper and two lower incisors and a canine in each jaw. The discovery of the Tertiary *Pliohyrax* has imparted renewed interest in these investigations. As to the Rabbit, Huxley's observation of an upper and a lower deciduous incisor, which never cut the gum but are absorbed in the unborn animal, was confirmed and enlarged. His ‘General Considerations’ are, as it were, a programme of Woodward's later work on the Dentition of Mammals.

“In 1893 the first part of his ‘Contributions to the Study of Mammalian Dentition: On the Development of the Teeth of the Macropodidæ’ appeared, and herein were described for the first time the presence of undoubted embryonic vestigial teeth in Marsupials.

¹ His latest exploit had been to cut sections of some photographic films for Sir William Abney, K.C.B.

As to the nature of the much debated successional premolar of Marsupials, reasons are adduced for the author's belief that it is in reality, not a replacing tooth, but a retarded milk-tooth. In the following year (*Anat. Anz.*, 1894, ix) vestigial teeth are described in several Rodentia, and are shown to belong to the milk-dentition. It is suggested that the functional molars of the Mammalia—the true molars so called—are to be assigned to the same set as the premolars, i.e. the second dentition (to be termed *third* dentition if we believe in the pre-milk dentition). The same year an able review of the recent work 'On the Succession and Genesis of Mammalian Teeth' appeared in *Science Progress* (1894, i).

"Part ii of the 'Contributions to the Study of Mammalian Dentition' (*P.Z.S.*, 1896) deals with the teeth of representatives of five out of the nine families of Insectivora. In this the author is led to view the considerable variation in the dentition of the Insectivora as a result of suppressions in the dental series, and of a tendency to reduction in the functional importance of the milk-dentition. Strictures are made on the tritubercular as well as on the conerescent theory of the evolution of the molar cusps, and the discussion of these general questions is conducted by a clever handling of arguments taken from ontogeny, comparative morphology, and phylogeny. In the last publication of the series (*Anat. Anz.*, 1896) Woodward sides with the partisans of a *pre-milk dentition* so far as Marsupials are concerned. A set of minute teeth in polyprotodont and diprotodont Marsupialia are described as the remnants of a pre-milk dentition. An analogous interpretation given by other workers to similar slight structures in some Placentalia is accepted 'with some reservation.' Of this paper it may be safely foretold that it will hold its own ground for some decades to come. One of the reasons for which he discontinued his researches in this branch of study, and would presumably have done so for years had he been spared, was that he was rightly convinced the last word in researches of this kind belong to palaeontology, but owing to the slow progress of palaeontological discoveries the answers also would be slow in coming."

Ere this series was complete, however, Martin Woodward had once more reverted to the Mollusca, and owing to the fortunate incident of his becoming Secretary to this Society in November, 1897, this return bid fair to result in his specializing in this subject, for all his later papers dealt with Molluscan anatomy, and, with two exceptions, appeared in our Proceedings, whilst he was preparing material for the volume on Mollusca in the Oxford Natural History that had been entrusted to him by its editor, Professor E. Ray

Lankester, and his last act as a teacher had been to deliver a course of lectures at the Royal College of Science that embodied his preliminary notes for that work.

In his first Molluscan paper, that dealing with the anatomy of *Ephippodonta Macdougalli*, Tate, he showed that the lattice-like valves, which 'gape' yet more widely than in its nearest ally, *Galeomma*, are completely invested by the mantle as in *Chlamydoconcha*—in brief, that this pelecypod had an internal shell.

His second paper, "On the Anatomy of *Pterocera*," contained careful observations, and the results of some extended experiments, on that enigmatical structure the crystalline style, which he regarded with Hazay and Haseloff as a reserve supply of food.

In *Natalina Caffra* (Fér.) he made a special study of the buccal mass and its functions, contrasting them with those of the more familiar *Testacella*.

Turning next to the larval Oyster, he showed, in contradistinction to another investigator, that the dimyarian stage remained, as it does at the present day, still to be discovered.

Three years later he seized a proffered opportunity of describing the previously unknown anatomy of *Mulleria*, which genus he concluded to be closely related to the Unionidæ, although extremely specialized in accordance with its fixed mode of life.

At the same time the anatomy of the minute *Adeorbis* was occupying him, and had to be described from serial sections, a most difficult piece of work, very ably accomplished, which resulted in the allocation of the Adeorbidæ to a position in the systematic series between the Rissoiidæ and the Naticidæ.

The problem of the systematic position of *Donovania* then claimed his attention, and he was able to demonstrate that it belonged to the Buccinidæ and ranked next to *Pisania*. This was the first occasion on which he was brought face to face with a question of nomenclature, an aspect of zoological study to which he was later on led to pay more attention.

The fortunate chance of two members of the Volutidæ, one rare, the other new, coming into his hands for description caused him to investigate the scanty information already possessed concerning the animals of that family, and to point out that "we are at present incorporating in the Volutidæ several forms derived from distinct stocks." His researches in this direction were unfinished, for he had written to his friend Mr. W. G. Freeman, of the Imperial Agricultural Department for the West Indies, in Barbados, to procure specimens of *Voluta musica*, the Linnean type, or at least first-named species. These specimens, with others from the same source, had recently

arrived and were awaiting his return to town: they have now been placed in competent hands for investigation. (*Vide infra*, p. 21.)

Able as all these papers were, and full of suggestive observations, they nevertheless did not give that scope for broader generalization which he found in his last subject, "The Anatomy of *Pleurotomaria Beyrichii*, Milg." Here, fortunate in his material, he was able to correct the observations of previous investigators, and to establish that this primitive rhipidoglossate Diotocardian approaches the architetenioglossate Monotocardians, *Vivipara* and *Nassopsis*, in the position of the point of origin of the visceral loop, and that it is a form very closely related to the stock from which the Monotocardia originated; while it shows signs of a common ancestry with the Cephalopoda in the position of the supporting skeleton of the gills and in the possession of a spiral stomach-coreum.

Martin Woodward also edited, and brought up to date by original notes, additions, and emendations, vols. ii-iv of the English translation of Korschelt & Heider's "Textbook of Embryology of Invertebrates" (1899-1900).

The amount of written matter is, however, in Martin Woodward's case no index to the work he really accomplished. An ever-ready willingness to help others was a noted feature of his character from early childhood, and wide indeed was the circle that profited by his kindly assistance and advice. As evidence of the esteem in which he was held and the impression he made on those with whom he came in contact, we may cite the following out of a letter from the Secretary to the Department of Agriculture and Technical Instruction for Ireland, who writes:—"During the time he was connected with the Department his services were of a most valuable kind, and were highly appreciated, and while his high character, brilliant talents, and devotion to Science were admired, his personality was such that those with whom he came most in contact deplore his loss as that of a real friend." Professor Tilden, too, similarly expressed himself in his address at the reopening of the Royal College of Science for the present session. This encomium from official quarters cannot fail to find warm response from the members of this Society, who one and all have reason to lament a friend in the loss of their late Secretary; they can, therefore, fully sympathize with his intimate friends and relations, and yet more with that home circle of which he was all his years the light, and just pride.

B. B. W.

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